

Remarks

Claims 1-20 are pending in the application. Claims 1-20 are rejected. Claims 16-18 and 20 are amended. All rejections are respectfully traversed.

The claimed invention is an identification tag comprising a memory, an optical transceiver, and a radio transceiver. During system operation, at least one of the transceivers operates in a receive mode, and at least one of the transceivers operates in a transmit mode. The receiving and transmitting transceivers can be the same or different. The ‘receiving’ transceiver, upon detecting a received signal (i.e., an optical signal, a radio signal, or both) on its associated channel, causes the ‘transmitting’ transceiver to respond with a transmitted signal (i.e., an optical signal, a radio signal, or both). The tag can also have both transceivers operate in both modes concurrently. In addition, the optical signal may be in the form of visible light.

Cato (U.S. Patent No. 5,874,724) describes a radio frequency identification (RFID) tag that includes a photodetector. A RFID base station issues a radio frequency command to a group of tags to be read. Only the tag illuminated by a special light source responds to a tag reader. The RFID tag of Cato does not disclose an **optical transceiver** operating in receive mode, transmit mode, or both.

Brick et al. (U.S. Patent No. 6,269,342) describes a programmable shelf tag system that includes a price display tag and a portable programming device including transceivers for infrared and radio frequency communications. The

programmable shelf tag system of Brick does not disclose communication via visible light.

Claims 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Cato (U.S. Patent No. 5,874,724).

Claims 16-18 and 20 are amended to recite ‘transceiver.’ No new subject matter is added. Cato describes an RFID tag that includes a photodetector. Cato does not disclose an **optical transceiver** operating in receive mode, transmit mode, or both. Those of ordinary skill in the art, would readily realize that a photodetector as described by Cato cannot operate as a transceiver to both transmit optical signals and receive optical signals.

Claims 1 and 6-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brick et al. (U.S. Patent No. 6,269,342) in view of Cato (U.S. Patent No. 5,874,724).

Regarding claim 1, Examiner states that Brick teaches an identification tag in a form of a single microcircuit comprising an optical transceiver, a radio transceiver, a memory storing an identification code connected to the optical transceiver and the radio transceiver, and means for operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode. Examiner states that the control unit (332) of Brick teaches means for operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode.

The control unit (332) of Brick fails to teach this limitation. The control unit “compares the received tag ID to a tag ID stored in memory 334,” column 13, lines 57-59 and column 14, lines 21-22; “sends signals to display unit 340 to modify the display to reflect the received new price,” column 13, lines 59-61 and column 14, lines 22-24; and “broadcasts an acknowledge signal,” column 13, lines 61-62 and column 14, lines 24-25.

Applicants do not see where the control 332 unit of Brick teaches means for operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode. The system of Brick never operates at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode. Control unit 332 would be useless for this task. Examiner also does not indicate that Cato teaches the claimed limitation. Therefore, Brick and Cato, in combination, can never make the claimed invention obvious.

Continuing with claim 1, Examiner explicitly states that Brick fails to teach means for transmitting the identification code by the transceiver operating in the transmit mode in response to receiving a predetermined signal by the transceiver operating in the receive mode. However, Examiner fails to point out the parts of Cato that teach this limitation. Applicants respectfully request that the Examiner clearly indicate which parts of Cato he believes teach the above limitation or withdraw his rejection.

Regarding claim 6, Examiner states that Brick teaches an identification code including one or more dates. Brick fails to teach this limitation. Dates are

associated with tag IDs in temporary pricing database of Brick. Brick never stores an identification code including one or more dates in a memory of an identification tag. Furthermore, Brick describes receiving an ID code associated with price or date information at the tag, see column 13, lines 55-61, but never transmitting the code by the tag. The tag of Brick transmits an acknowledge signal. The updated price information is displayed on the tag display device, but never transmitted by a transceiver operating in the transmit mode in response to receiving a predetermined signal by the transceiver operating in the receive mode, as claimed. Cato never mentions dates. The combination of Brick and Cato cannot make the claimed invention obvious.

Regarding claim 7, the received signal is a light signal, and the transmitted signal is a radio signal. Brick fails to teach this limitation. The tag of Brick responds to a received radio signal by transmitting a radio signal, column 13, lines 55-63. The tag of Brick responds to a received infrared signal by transmitting an infrared signal, column 14, lines 17-26. Cato teaches receiving a light signal at a photodetector and transmitting a radio signal, column 4, lines 17-24. However, neither Brick nor Cato disclose means for operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode. The tag of Brick does either optical communication or radio frequency communication, not both, and has no need for means for operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode. The tag of Cato does not have an optical transceiver that can operate in transmit mode and, therefore, also has no need for means for operating at least one of

the transceivers in receive mode while operating at least one of the transceivers in transmit mode. The combination of Brick and Cato cannot make the claimed invention obvious.

Regarding claim 8, the received signal is a radio signal. Brick fails to teach this limitation. As stated above, Brick only discloses responding to a received RF signal by transmitting an RF signal. Furthermore, Cato requires a received optical signal, column 4, line 25. Brick and Cato can never make the invention obvious.

Regarding claim 9, the identification tag also includes means for operating at least one of the transceivers in receive mode and transmit mode while operating the other transceivers in transmit mode. Brick teaches operating a single transceiver to transmit in response to receiving a signal at that transceiver. Cato only has a radio transceiver; the photodetector of Cato is not a transceiver and cannot operate in transmit mode.

Regarding claim 10, the identification tag also includes means for operating at least one of the transceivers in receive mode and transmit mode while operating the other transceivers in receive mode. Again, Brick teaches operating a single transceiver to transmit in response to receiving a signal at that transceiver. Cato only has a radio transceiver; the photodetector of Cato is not an optical transceiver.

Regarding claim 11, the identification tag also includes means for operating at least one of the transceivers in receive mode and transmit mode while

operating the other transceivers in receive mode and transmit mode. As above, Brick teaches operating a single transceiver to transmit in response to receiving a signal at that transceiver. Cato only has a radio transceiver; the photodetector of Cato is not a transceiver and cannot operate in transmit mode.

Regarding claim 12, claimed is means for synchronizing the transmitting and receiving according to the receiving light. The synchronizing avoids collision of two or more tags responding to the same received signal. The Examiner states that Brick teaches means for synchronizing the transmitting and receiving according to the receiving light. The Examiner also states that Brick fails to teach this limitation.

Brick et al fails to specifically teach means for transmitting the identification code by the transceiver operating in the transmit mode in response to receiving a predetermined signal by the transceiver operating in the receive mode; means for synchronizing the transmitting and receiving according to receiving light.

Clarification on this point of rejection is respectfully requested. Brick fails to teach this limitation. Brick and Cato teach responding to a received signal. Applicants fail to find reference to synchronizing the transmitting and receiving according to the receiving light in either Brick or Cato.

Regarding claim 13, claimed is an identification tag in which the optical transceiver is omni-directional. Regarding claim 14, claimed is an identification tag in which the optical transceiver is narrow beam. As above, Brick and Cato fail to teach means for operating at least one of the

transceivers in receive mode while operating at least one of the transceivers in transmit mode. Brick and Cato fail to make the claimed invention obvious.

Regarding claim 15, claimed is storing an identification code in a memory connected to an optical transceiver and an radio transceiver, operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode, and transmitting the identification code by the transceiver operating in the transmit mode in response to receiving a predetermined signal by the transceiver operating in the receive mode.

Brick and Cato fail to teach the subject matter of this claim. Brick teaches operating a single transceiver to transmit in response to receiving a signal at that transceiver. Brick does not teach operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode. Cato does not cure the failures of Brick. Cato only has a radio transceiver; the photodetector of Cato is not an optical transceiver.

Regarding claim 16, as amended, claimed is an identification tag including a memory storing an identification code, an optical transceiver for receiving a predetermined optical signal, and a radio transceiver for transmitting the identification code stored in the memory when receiving the predetermined optical signal by the optical transceiver. Brick and Cato fail to teach the subject matter of this claim. Brick teaches operating a single transceiver to transmit in response to receiving a signal at that transceiver. Brick does not teach transmitting, by a radio transceiver, the identification code stored in

the memory when receiving the predetermined optical signal by the optical transceiver. Cato does not cure the failures of Brick. Cato only has a radio transceiver; the photodetector of Cato is not an optical transceiver.

Regarding claim 17, as amended, claimed is an identification tag including an optical transceiver and a radio transceiver. The optical transceiver transmits an optical signal and the radio transceiver receives a radio signal. The tag also includes means for operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode, and means for transmitting the identification code by the transceivers operating in the transmit mode in response to receiving a predetermined signal by the transceivers operating in the receive mode. Brick clearly does not teach the claimed invention. Brick does not disclose means for operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode. Brick only operates one transceiver to receive and transmit. Cato does not cure the defects of Brick. Cato does not have an optical transceiver. The tag of Cato never transmits an optical signal. The tag of Cato, which only has one transceiver, has no use for means for operating at least one of the transceivers in receive mode while operating at least one of the transceivers in transmit mode. Neither Brick nor Cato transmit the identification code by the transceivers operating in the transmit mode in response to receiving a predetermined signal by the transceivers operating in the receive mode. Brick and Cato cannot make the claimed invention obvious.

Regarding claim 18, claimed is receiving a predetermined optical signal at an optical communication transceiver in an identification tag, and transmitting an identification code stored in memory by a radio communication transceiver when receiving the predetermined optical signal by the optical communication part. Brick teaches operating a single transceiver to transmit in response to receiving a signal at that transceiver. Cato only has a radio transceiver; the photodetector of Cato is not a transceiver and cannot operate in receive mode. Brick and Cato do not make the claimed invention obvious.

Regarding claim 19, claimed is operating at least one of the communication transceivers in receive mode while operating at least one of the communication transceivers in transmit mode, and transmitting the identification code by the communication transceiver operating in the transmit mode in response to receiving a predetermined signal by the communication transceiver operating in the receive mode. As above, Brick teaches operating a single transceiver to transmit in response to receiving a signal at that transceiver. Cato only has a radio transceiver; the photodetector of Cato is not a transceiver and cannot operate in receive mode. Brick and Cato do not make the claimed invention obvious.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brick et al. (U.S. Patent No. 6,269,342) as modified by Cato (U.S. Patent No. 5,874,724) further in view of Gloton (U.S. Patent No. 5,635,701).

Regarding claim 2, claimed is an optical transceiver including a single photodiode configured to transmit and receive light signals. The Examiner states that Brick in view of Cato fails to teach the use of an optical transceiver including a single photodiode configured to transmit and receive light signals. The Examiner further states that Gloton teaches this limitation. Gloton describes a portable device for linking a chip card to a central processing unit. Clearly, Gloton is not combinable with Brick and Cato. Gloton is concerned with communication linking within a CPU. A person skilled in the art of the invention would not look to Gloton to cure the defects of Brick and Cato. Gloton cannot be used to render the invention as claimed obvious.

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brick et al. (U.S. Patent No. 6,269,342) as modified by Cato (U.S. Patent No. 5,874,724) further in view of Beigel et al. (U.S. Patent No. 6,784,788).

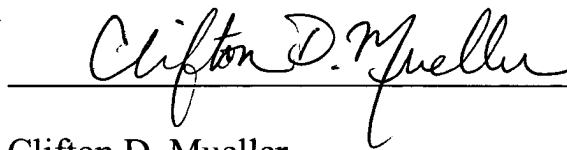
Regarding claim 3, claimed is a radio transceiver including an antenna formed as an induction coil. In claim 4, the induction coil acquires power for the optical transceiver. In claim 5, the tag includes means for storing the power. The Examiner states that Brick as modified by Cato fails to specifically teach the radio transceiver including an antenna formed by an induction coil, the induction coil acquiring power for the optical transceiver, and means for storing the power. The Examiner also states that Beigel teaches the claimed limitations. However, Beigel does not cure the defects of Brick and Cato. Beigel does not teach means for operating at least one of the transceivers in receive mode while operating at least one of the transceivers

in transmit mode. Brick as modified by Cato and Beigel cannot make the claimed invention obvious.

It is believed that this application is now in condition for allowance. A notice to this effect is respectfully requested. Should further questions arise concerning this application, the Examiner is invited to call Applicant's agent at the number listed below. Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account 50-0749.

Respectfully submitted,
Mitsubishi Electric Research Laboratories, Inc.

By

A handwritten signature in cursive script, reading "Clifton D. Mueller", is written over a horizontal line.

Clifton D. Mueller
Agent for the Assignee
Reg. No. 57,836

201 Broadway, 8th Floor
Cambridge, MA 02139
Telephone: (617) 631-7517
Customer No. 022199